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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/874,340 | 06/05/2001 | Patrice Hirtzlin | PF000054 | 7857 |

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| EXAMINER |
| WIMER, MICHAEL C |
| ART UNIT |
| PAPER NUMBER |
| 2821 |

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N

09/874,340

Applicant(s)

HIRTZLIN ET AL.

Examiner

Michael C. Wimer

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

There is a conflict or confusion of terms and/or reference characters in the specification as follows. On page 5, lines 17-18 and 20 the numeral "3" is referred to as a circular aperture and a circular orifice (part of the support element and allowing passage of a fastening stem). From a physical and electrical point of view, it appears that numeral 3 is a conductive sleeve, bore, etc., and part of the cavity 1 for allowing the coax 21 to pass. On page 6, lines 21 and 26 the numeral "3" is referred to as a "stem". The term must be clarified here because an aperture is generally opposite of a stem. Here the stem is said to form part of a support "4" as set forth on page 6, lines 26 and 27.

There is also a conflict with the term "stem 31" on page 7, lines 20-21 and the term "body 31" on page 8, line 5. The element "41" is also referred to as a "stem". Does the element 31 define the same type of structure as 44 (referred to as a stem on page 8, lines 4,5,7,9,10,12 (where the stem is said to define a resonant cavity) and 18)?

The structures 1,4 (not identified), 31 and 45 all appear to electrically perform the same function, i.e., as a waveguide feeder or cavity for the lower portions of the antenna elements. However, the specification is silent as to the electrical function.

Clarification of these structures in the specification is required for a proper understanding and definition of elements that comprise the invention's components.

Appropriate correction is required.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

"4" (used as a "support" on page 6, lines 26 and 27).

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-4, 6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Grybos et al (5986619).

Regarding Claims 1-4,6 and 9, Grybos et al show a source antenna for TX/RX EM waves comprising an array of "n" radiating elements 22a-d operating in a first frequency band (VHF-137 to 151 MHz) and an element 24 with longitudinal radiation operating in a second frequency band (UHF- 450 MHz) and situated at the center of the array and having an axis coinciding with an axis of radiation of the EM waves, the array of "n" radiating elements and the element with longitudinal radiation having a common phase center, and the "n" radiating elements 22 being arranged symmetrically about the longitudinal radiation

element, and all radiating elements consist of a traveling wave antenna, i.e., a helix.

Further regarding Claim 3, the helical antennas 22 and 24 are taught to be sized accordingly to the frequency of operation and to have a conical beam (see col. 3, lines 30-32, for one example).

Further regarding Claim 4, the helices are arranged so as to form a sequential-rotation array because they are fed by a BFN 26 or 30.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 5,8,10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grybos et al. (5986619) in view of Spencer(5757323).

Grybos et al do not teach the use of components of these claims.

Regarding Claims 5,8,10 and 11, Spencer is cited as resolving the level of ordinary skill in the antenna art and as evidence of obviousness, and shows a printed circuit feed in Fig. 2a-d, a waveguide feed in Fig. 1d for feeding a dielectric rod radiator 3. It would have been obvious to the skilled artisan to employ such feeding and the dielectric radiator in lieu of the inner antenna 24 of Grybos et al. for providing a compact array.

7. Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grybos et al.

Regarding Claim 7, Grybos et al suggest that the elements be 3 or more in number. It would have been obvious to the antenna artisan to employ an 8 element helical array in order to increase gain and narrow the beam pattern.

Regarding Claim 12, since uplink and downlink frequencies are employed, the separate bands used by Grybos et al. are fully intended to be operated as respective TX and RX bands. A skilled artisan would have found it obvious in Grybos et al as that use is illustrated in Fig. 1.

8. Claims 1-7 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Markowitz et al. (4559539) in view of Carlsson et al. (4165454).

Regarding Claims 1 & 9, Markowitz et al. show in Figs. 3,4 & 5, a source-antenna for TX/RX EM waves comprising on a support 22' an array of "n" independent radiating elements, e.g., 40,42 (at 30') operating in a first frequency band and an element 11' with longitudinal radiation operating in a second frequency band, all antennas have their own respective axes and the elements at the portion 30' are symmetrically arranged with respect to the longitudinal-radiation element 11'.

Figure 5 shows a horn radiator 42 within the portion 30'. However, it would have been obvious to the skilled artisan to employ two spiral, traveling wave helical antennas within the portions 30, according to the suggestion of Carlsson et al. (see col. 2, lines 31-68 and col. 3, lines 13-25), where conductors 15,15',15" propagate a traveling wave. As to Claims 2-4, it is recognized that a helix is another name for a spiral. As to Claim 5, the helical antennas are printed. As to Claims 6 & 7, the number of antenna elements is an obvious limitation dependent

upon the desired number of radiators in a particular design. Regarding Claims 10 & 11, since a waveguide antenna 42, it would have been obvious to the skilled artisan to employ the same for the longitudinal antenna 11'.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Markowitz et al. and Carlsson et al. as applied to claim 1 above, and further in view of Spencer (5757323). Spencer is cited to show evidence of obviousness and the use of dielectric rod antennas as the radiator. It would have been obvious to employ such a radiator in lieu of the spiral/helix 11' in Markowitz et al.

Response to Arguments

10. Applicant's arguments filed 15 March 2004 have been fully considered but they are not persuasive. Specifically, Grybos et al do show the claimed structure.

Although Grybos et al show a quadrifilar helix antenna, each helical arm has an axis. The axes may all be the same. The Claims do not preclude the use of such a helical antenna.

The arguments regarding the description of a concentric antenna by Grybos et al. are not commensurate with the scope of the claims because Claim 1 does not preclude the structure in the reference. Applicant's structure shows a concentric arrangement of antennas, one with four (Fig. 2) and the second with eight (Fig. 5).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wimer whose telephone number is (571) 272-1833. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don K. Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MCW
05/18/04



Michael C. Wimer
Primary Examiner
Art Unit 2821